The Southwest Fisheries Science Center's

2008 Billfish Newsletter

- 2006 and 2007 Surveys: Trends in Angler Catch Rates
- 2006 and 2007 Billfish Tagging and Recoveries
- Top Anglers and Captains Acknowledged
- Successful Catch and Release
- Billfish "Take Along" ID and Tagging Guide
- Pacific Striped Marlin Stock Status Update

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PROLOGUE

This is the 46th issue of the *Billfish Newsletter.* NOAA Fisheries and the billfish angling community have combined efforts to measure angler success for billfishing, creating one of the longest time series available for recreational billfishing, charting trends in relative abundance for key species. This time series, among others, is key to assessing the health of the stocks. The Southwest Fisheries Science Center remains committed to monitoring recreational billfishing success.

Norm Bartoo, PhD.
Acting Director,
Southwest Fisheries Science Center

INTRODUCTION

The *Billfish Newsletter* describes billfish research projects conducted at the NOAA Fisheries Southwest Fisheries Science Center (SWFSC). Emphasis is on billfish angling in the Pacific Ocean. The results of the 2006 and 2007 International Billfish Angler Surveys and the Cooperative Billfish Tagging Program for the Pacific are described in this issue. The data presented are the result of cooperation with billfish anglers, sportfishing clubs, commercial fishers, and agencies affiliated with the SWFSC. We express our sincere gratitude to all anglers completing the Angler Survey forms and to all those who tag and release billfish and report recaptures of tagged billfish. Your efforts are helping to monitor and conserve these magnificent fish. We welcome comments concerning both the Survey and Tagging programs as well as the contents of this newsletter.

THE INTERNATIONAL BILLFISH ANGLER SURVEY

The Billfish Angler Survey provides the only estimates of recreational billfish angling activities for the Pacific and Indian Oceans. This collection of recreational billfish catch and effort data began in 1969 and now provides a 39-year index of fishing success in many areas of the Pacific. Catch per unit of effort (CPUE) is measured in number of billfish caught per angler fishing day. The time series of angler success provides a measure of relative abundance and is the only survey independent of commercial fisheries in the Pacific. Trends of CPUE tracked over time may indicate changes in the health and size of billfish stocks. These indices of relative abundance are important to scientists because the information is used for analyses of stock condition, developing management options, and monitoring fishery interactions.

In order to improve the reliability of the catch and effort statistics, we encourage more anglers to submit Survey cards. We routinely mail forms to anglers who have submitted a completed Survey or Billfish Tagging card in the last 3 years. However, if you or someone you know needs additional forms, please do not hesitate to contact us. Alternatively, the form can be downloaded from the SWFSC website and mailed to our office: http://swfsc.noaa.gov/frd-billfish.aspx.

The Angler Survey results presented here are primarily for the Pacific areas, although anglers also reported some fishing activity in the Indian and Atlantic Oceans. In 2006, throughout all areas, anglers reported catching 5,164 billfish in 6,540 days; in 2007, 3,913 billfish were reported caught during 5,654 fishing days. Fishing effort, in angler fishing days, and CPUE, in billfish catch per fishing days are shown by location in Table 1 for all billfish reported caught in both years. The mean CPUE in the Pacific was 0.82 in 2006 and 0.68 in 2007, and for all oceans was 0.79 in 2006 and 0.69 in 2007. The 2006 and 2007 Pacific Ocean mean catch rates are higher than the 0.62 billfish per day catch rate reported for 2005 and represent the highest and fourth highest reported catch rates, respectively, since 1983. The recent 5-year average (2003-2007) in the Pacific of 0.72 billfish per fishing day is more than double the rate of 0.34 reported for the late 1970s (1975-1979) when billfish stocks were heavily impacted by large international commercial fisheries.

The Billfish Newsletter says "Goodbye" to Rand Rasmussen

Rand has been an integral part of the Billfish Research Program at the SWFSC for the past two decades. He took on the monumental task of developing and maintaining a database to archive tens of thousands of tag report cards and angler surveys that has greatly simplified the life of the data analysts and assessment scientists. Many of you probably communicated repeatedly with Rand over the years as he often fielded inquiries regarding the Tagging Program and Angler Survey. In addition, Rand was invaluable to the program on the water where he was heavily involved in the Center's large pelagic fish research programs; he participated in nearly every pelagic shark research expedition since 1994, often as cruise leader. Rand's high standard for data quality in the laboratory and his leadership in the field will be missed. We wish Rand a happy and healthy retirement!

Table 1. Catch and effort reported for the 2006 and 2007 International Billfish Angler Survey. Numbers indicate total days fished by location, number of billfish caught, and the catch-per-fishing day. The most predominant species caught by area is also listed: striped marlin (SM), blue marlin (BLM), black marlin (BLK), swordfish (SWF), and sailfish (SF).

LOCATION	YEAR	ANGLER FISHING DAYS	NUMBER OF BILLFISH	BILLFISH PER FISHING DAY (CPUE)	MAJOR SPECIES
PACIFIC OCEAN					
Hawaii, U.S.A.	2006 2007	3,168 3,246	1,269 1,189	0.40 0.37	BLM
Southern California, U.S.A.	2006 2007	966 691	216 117	0.22 0.17	SM
Baja California, Mex.	2006 2007	813 740	871 1,425	1.07 1.93	SM
Australia	2006 2007	218 242	148 92	0.68 0.38	BLK
Costa Rica	2006 2007	342 98	1,750 314	5.12 3.20	SF
Acapulco, Ixtapa, Zihuatanejo, Mex.	2006 2007	120 103	135 107	1.13 1.04	SF
Panama	2006 2007	98 61	103 119	1.05 1.95	SF
Tahiti, French Polynesia	2006 2007	57 92	10 22	0.18 0.24	BLM
New Zealand	2006 2007	106 32	160 8	1.51 0.25	SM
Puerto Vallarta, Mex.	2006 2007	63 38	37 23	0.59 0.61	SF/SM
Manzanillo, Mexico	2006 2007	11 79	8 36	0.73 0.46	SF
Japan	2006 2007	22 54	2 10	0.09 0.19	BLM
Guatemala	2006 2007	35 23	152 192	4.34 8.35	SF
Mazatlan, Mexico	2006 2007	29 28	64 120	2.21 4.29	SF
New Guinea	2006 2007	20 15	0 3	0.00 0.20	BLM
Guaymas, Mexico	2006 2007	15 8	70 1	4.67 0.13	SF
Marshall Islands	2006 2007	4 17	1 5	0.25 0.29	SM
Fiji	2006 2007	3 2	0 0	0.00 0.00	
Galapagos Islands, Ecuador	2007	3	1	0.33	SM
Samoa	2007	3	2	0.67	SF
Guam, U.S.A.	2006	2	1	0.50	BLM
Oaxaca, Mexico	2006	2	1	0.50	SF
ATLANTIC OCEAN					
Florida, U.S.A.	2006 2007	120 32	110 17	0.92 0.53	SF
Venezuela	2006 2007	13 13	15 4	1.15 0.31	BLM
Bahamas	2006 2007	10 7	2 2	0.20 0.29	SF
Bermuda, U.K.	2006 2007	9 2	3 1	0.33 0.50	BLM
Gulf of Mexico	2006	10	23	2.30	SWF
Dominican Republic	2007	9	14	1.56	BLM

LOCATION	YEAR	ANGLER FISHING DAYS	NUMBER OF BILLFISH	BILLFISH PER FISHING DAY (CPUE)	MAJOR SPECIES
ATLANTIC OCEAN					
Hudson Canyon, U.S.A.	2006	8	1	0.13	SWF
Madeira Island, Portugal	2006 2007	6 1	0 1	0.00 1.00	BLM
Ghana	2006	6	2	0.33	BLM
St. Thomas, U.S.A.	2007	5	5	1.00	BLM
Cancun/Yucatan, Mexico	2007	1	2	2.00	SF
INDIAN OCEAN					
Dubai / United Arab Emirates	2006	200	0	0.00	
Republic of South Africa	2006	50	4	0.08	SF
Mauritius	2006 2007	7 9	1 81	0.14 9.00	SF
Kenya	2006	7	5	0.71	SF
Totals	**2006** **2007**	**6,540** **5,654**	**5,164** **3,913**	**0.79** **0.69**	

PACIFIC BLUE MARLIN

Blue marlin are tropical and sub-tropical in distribution and continue to be the most common species encountered by billfish anglers in Hawaii and the central and western Pacific island nations. Survey respondents reported catching 705 blue marlin off Hawaii in 3,168 days of fishing (0.22 CPUE) in 2006, and 674 blue marlin in 3,246 days of fishing (0.21 CPUE) in 2007. A downward trend in catch rates since 2005 has occurred in Hawaii, although catch rates over the past three years are still among the highest since 1972 (Figure 1a). In the eastern Pacific, blue marlin rarely extend north of Magdalena Bay, Baja California Sur, Mexico. The reported catch off Baja in 2006 totaled 42 in 813 days of fishing (0.05 CPUE), which is essentially the same catch rate reported in the prior two years, and near the lowest rate reported in the past 20 years. A slight increase in the blue marlin catch rate occurred in 2007 when 72 blue marlin were reported caught in 740 fishing days (0.10 CPUE). In other areas, one blue marlin was caught in 23 angling days off Guaymas during 2006 and 2007 (0.04 CPUE), and thirty six blue marlin were reported caught from Mazatlan to Acapulco, Mexico, in 473 fishing days (0.08 CPUE). A high catch rate was reported for the Marshall Islands in 2005 (0.88 CPUE); however, in 21 days of fishing at the Marshalls during 2006 and 2007, there were only four blue marlin reported caught (0.19 CPUE). Blue marlin catches were also reported off southern California, Florida, Guatemala, South Africa, Venezuela, Bahamas, Ghana, New Zealand, Tahiti, Costa Rica, Japan, Panama, Australia, Guam, Samoa, New Guinea, Galapagos Islands, and Fiji.

STRIPED MARLIN

Striped Marlin is the most common billfish species encountered by anglers off southern California and northern Mexico, including Baja California, as well as off New Zealand. In 2006, anglers in southern California reported catching 209 striped marlin in 966 angler days for a catch rate of 0.22, which was the second highest striped marlin catch rate reported from this area in the 39 years of the Survey. In 2007, 0.17 striped marlin were caught per angler day, which was the fifth highest catch rate reported from southern California. Similarly, striped marlin catch rates reported from all of Mexico in 2006 and 2007 were the highest on record when 0.77 and 1.33 stripers, respectively, were caught per angler day. Within Mexican waters, Baja California Sur is an angling hotspot for striped marlin. In 2006, anglers reported catching 775 striped marlin in 813 days of fishing off Baja for a catch rate of 0.95; in 2007, 1,299 stripers were reported caught in 740 fishing days for a catch rate of 1.76. Striped marlin are less abundant south of Acapulco where sailfish are more common; however, a few stripers were caught in Costa Rica, Venezuela, and Panama, as well as in Hawaii, Tahiti, Australia, Japan, and New Zealand. Indeed, 2006 was another productive year in New Zealand where 123 stripers were caught in 106 days (1.16 CPUE). Trends in mean angler catch rates for striped marlin in three areas with high reporting rates are shown graphically in Figure 1b. The data shown for Mexico is an average for all areas reported.

SAILFISH

Sailfish prefer tropical habitat and are abundant in eastern Pacific coastal and offshore waters from Mexico to Ecuador. The highest catch rates reported through the International Billfish Angler Survey are typically from southern Mexico and Central America; however, high catch rates were reported from northern Mexico off Guaymas in 2006 where 68 sailfish were caught in 15 angler days (4.53 CPUE). From Mazatlan south in Mexican waters, 179 sails were caught in 225 fishing days in 2006 and 233 sails were caught in 248 days in 2007 for catch rates of 0.80 and 0.94, respectively. Central America sailfish catch was high in 2006 and 2007, with the greatest numbers of sailfish caught off Costa Rica. In 2006, anglers in Costa Rica reported catching a total of 1,696 sails in 342 days for a catch rate of 4.96 sails per fishing day, the second highest CPUE reported from Costa Rica throughout the Survey history. A decrease in both catch and effort was reported from Costa Rica in 2007 when 277 sailfish were caught in 98 fishing days (2.83 CPUE). The sailfish catch rate reported from Guatemala in 2007 was the highest on record; anglers reported catching 186 sails in 23 days (8.09 CPUE). This was an increase from 2006 when 151 sails were caught in 35 days (4.31 CPUE). Anglers in Panama reported catching 77 sailfish in 98 days (0.79 CPUE) in 2006, and 78 in 61 days (1.28 CPUE) in 2007. Figure 1c shows the trend in catch rates over time for Central America countries with high reporting rates and all of Mexico combined.

BLACK MARLIN

Black marlin are common in tropical waters and only occasionally frequent temperate areas. They are the most common species encountered by billfish anglers in Australia as well as in some of the western Pacific island nations. Anglers reported catching 138 black marlin in 218 fishing days (0.63 CPUE) off Australia in 2006, which was a decrease from 2005 when the highest catch rate had been reported since 1973 (Figure 1d). A further decrease in catch rate was observed in 2007 when anglers fishing off Australia reported catching 60 black marlin in 242 fishing days (0.25 CPUE). The Panama catch rate of black marlin has slightly increased since 2004. Anglers in Panama reported catching 15 black marlin in 98 fishing days (0.15 CPUE) in 2006 and 15 black marlin in 61 fishing days (0.25 CPUE) in 2007. Black marlin are often reported off Puerto Vallarta and around the tip of Baja California, Mexico, but rarely occur off southern California. Eleven black marlin were reported taken off Puerto Vallarta in 63 fishing days (0.18 CPUE) in 2006 and four were reported caught in 38 fishing days (0.11 CPUE) in 2007. Anglers also reported catching a few black marlin off Hawaii, New Zealand, Costa Rica, and Japan.

SHORTBILL SPEARFISH

The shortbill spearfish is an oceanic species with limited abundance near the west coasts of the U.S., Mexico, and Central America. In 2006, anglers reported catching 306 shortbills in 3,168 fishing days off Hawaii for a catch rate of 0.10 fish per day; in 2007, 278 shortbill spearfish were caught off Hawaii in 3,246 fishing days (0.09 CPUE). Only 12 other shortbill spearfish were reported caught during 2006 and 2007 in the following areas: New Zealand (6), Mauritius Island (3), Baja California (1), Marshall Islands (1), and Japan (1).

BROADBILL SWORDFISH

Fishing for swordfish differs from other billfishing in that the fish are generally targeted at night. Swordfish are a commercially important fish, but have not recently been taken in high numbers by recreational anglers. Even so, a few respondents to the 2006 and 2007 International Billfish Angler Surveys reported catching swordfish off Hawaii, Florida, New York, Venezuela, Southern California, Mauritius, and Australia.

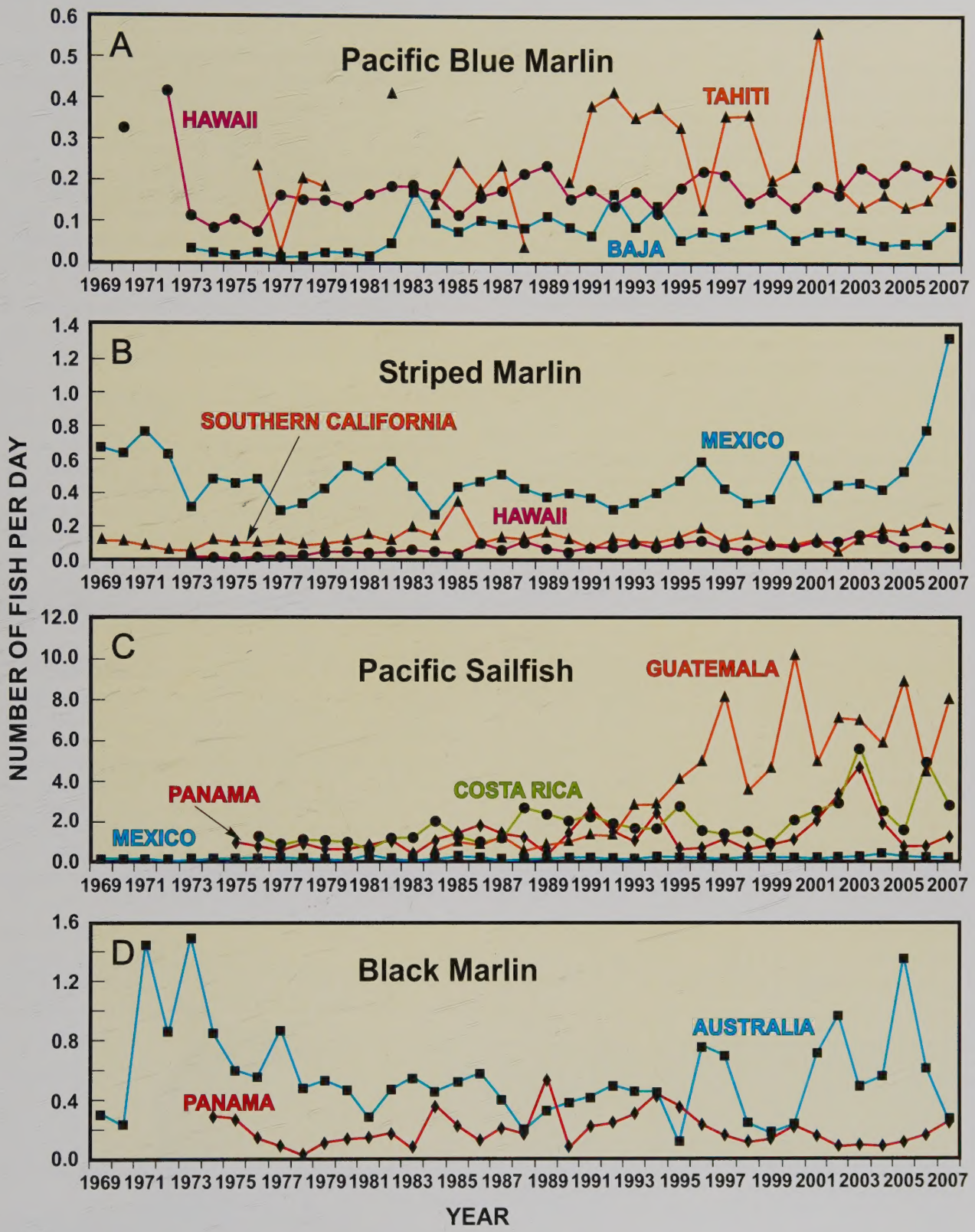


Figure 1. Catch per unit of effort (CPUE) in number of fish per angler day reported by region from 1969 to 2007 for blue marlin (A), striped marlin (B), Pacific sailfish (C), and black marlin (D).

THE BILLFISH TAGGING PROGRAM

The SWFSC's angler based Billfish Tagging Program began in 1963 and has provided tagging supplies to billfish anglers for 46 continuous years. Tag release and recapture data are used to determine movement and migration patterns, species distribution, and age and growth. This volunteer tagging program depends on the participation and cooperation of recreational anglers, sportfishing organizations, and commercial fishers. Since inception, over 57,000 fish of 75 different species have been tagged and released (Table 2). Our emphasis continues to focus on the skillful tagging of all billfish in the Pacific and Indian Oceans. Other species tagged over the years are reported here as general interest and also so that anglers will know to look out for tags on a number of different species. While we consider tag-and-release vital for conservation, we do not encourage the use of our billfish tags for non-billfish. If you want to tag billfish as part of our program, please let us know and we can send you some tags!

Table 2. Summary of all fish tagged in 2006 and 2007 with releases and recoveries for the period 1963-2007.

Species Name	Release 2006	Release 2007	Release Total	Return Total	Rate %
Striped Marlin	220	276	22,640	341	1.51
Pacific Blue Marlin	661	471	9,247	82	0.89
Sailfish	109	27	9,040	49	0.54
Marlin, unid.	6	3	4,326	4	0.09
Black Marlin	9	2	3,383	69	2.04
Shortfin Mako Shark	0	0	1,985	64	3.22
Shortbill Spearfish	118	61	1,947	2	0.10
Blue Shark	0	0	622	14	2.25
Common Thresher	0	0	562	17	3.02
Broadbill Swordfish	0	0	521	17	3.26
Yellowfin Tuna	0	0	348	24	6.90
Skipjack Tuna	1	1	99	2	2.02
Albacore Tuna	0	0	87	1	1.15
Bigeye Tuna	0	0	79	2	2.53
Bluefin Tuna	0	1	58	8	13.79
Hammerhead Shark	0	0	51	1	1.96
Atlantic Blue Marlin	0	0	43	0	0.00
Salmon Shark	0	0	33	1	3.03
Billfish, unid.	0	1	25	2	8.00
Silky Shark	0	0	21	0	0.00
White Marlin	0	0	13	1	7.69
Basking Shark	0	0	7	0	0.00
Longbill Spearfish	0	0	3	0	0.00
Other Tunas	2	1	21	1	4.76
All Others	6	2	2,626	99	3.77
TOTALS	1,132	846	57,787	801	1.39

Billfish Tagging Program report cards indicate that a total of 1,964 billfish and 14 other fish were tagged and released during 2006 and 2007. In total, 1,132 blue marlin, 496 striped marlin, 136 sailfish, 179 spearfish, 11 black marlin, and ten unknown billfish were reported tagged and released (Table 2). More billfish were reported tagged in 2006 than in 2007. In particular, a greater number of blue marlin, black marlin, sailfish, and shortbill spearfish were tagged in 2006; however, there were more striped marlin tagged in 2007. The most notable difference in tagging effort between 2006 and 2007 for any billfish species was a twenty five percent reduction in tags released on sailfish from 2006 (109) to 2007 (27).

Table 3 shows the cumulative tagging efforts in 2006 and 2007, by area, for all billfish tagged. Most billfish were tagged in U.S. or Mexican waters, while a few were tagged elsewhere in the Pacific and in the Indian and Atlantic Oceans. In Hawaii, 1,493 tags were deployed on billfish during 2006 and 2007. Over these two years 1,085 blue marlin, 208 striped marlin, 176 shortbill spearfish, four black marlin, and four unidentified billfish were reported tagged and released from the Hawaiian Islands. Tagging effort off Mexico remained strong with 149 releases in 2006 and 172 in 2007. In 2006, the billfish tag releases were distributed fairly evenly off Mexico. Conversely, over ninety percent of tagging effort in Mexico was concentrated along the Baja Peninsula in 2007, where 156 billfish, mostly striped marlin, were tagged. The number of striped marlin tagged off Baja in 2007 (149) was closer to the number seen in previous years compared to an unusually low number of striped marlin releases from Baja anglers in 2006 (36). On the contrary, fifty-two striped marlin were tagged off southern California in 2006, which was at least double the number of striped marlin tagged in this area in 2005 (25) and 2007 (26).

Table 3. Cumulative summary of billfish tagged in 2006 and 2007 by region.

AREA	SPECIES	TOTAL
PACIFIC OCEAN		
Hawaii, U.S.A.	Pacific Blue Marlin	1,085
	Striped Marlin	208
	Shortbill Spearfish	176
	Sailfish	16
	Black Marlin	4
	Billfish, unidentified	4
Southern California, U.S.A.	Striped Marlin	78
	Pacific Blue Marlin	5
	Billfish, unidentified	1
	Shortbill Spearfish	1
Baja California, Mexico	Striped Marlin	185
	Sailfish	17
	Pacific Blue Marlin	3
	Billfish, unidentified	2
Acapulco / Ixtapa / Zihuatanejo, Mexico	Sailfish	43
	Striped Marlin	8
	Pacific Blue Marlin	1
Manzanillo, Mexico	Sailfish	25
	Striped Marlin	6
	Pacific Blue Marlin	3
Puerto Vallarta, Mexico	Sailfish	9
	Pacific Blue Marlin	6
	Black Marlin	5
	Striped Marlin	3
Mazatlan, Mexico	Striped Marlin	3
Guaymas, Mexico	Sailfish	1
	Striped Marlin	1
Costa Rica	Sailfish	11
	Pacific Blue Marlin	7
Tahiti, French Polynesia	Pacific Blue Marlin	7
Samoa	Billfish, unidentified	3
	Sailfish	2
	Striped Marlin	2
	Pacific Blue Marlin	1
Fiji	Sailfish	4
	Pacific Blue Marlin	1
Marshall Islands	Pacific Blue Marlin	3
Australia	Sailfish	1
Philippines	Pacific Blue Marlin	1
Thailand	Striped Marlin	1
INDIAN OCEAN		
Mauritius Island	Pacific Blue Marlin	7
	Sailfish	5
	Black Marlin	2
Kenya	Shortbill Spearfish	2
	Pacific Blue Marlin	1
Maldives/Diego Garcia	Sailfish	2
ATLANTIC OCEAN		
Dakar, Senegal	Pacific Blue Marlin	1
Gulf of Mexico	Striped Marlin	1
TOTAL		1,964

CAPTAIN AND ANGLER ACKNOWLEDGEMENTS

We are proud to recognize the cooperating anglers and captains who tag and release billfish. In 2006, 810 anglers reported tagging at least one billfish; in 2007, there were 607 anglers contributing to the tagging effort. Individual recognition of the 93 anglers who reported tagging three or more billfish during 2006 and 2007 is presented in Table 4. We regret that limited space prevents listing all taggers. Rich Chaponot and James Karamouzis each tagged ten or more billfish off Hawaii during 2006 and 2007. Lynn Jasper tagged nine billfish off Southern California. In Mexico, off Baja California, Don Anderson (16) and Pete Johnson Sr. (11) lead the tagging efforts. The top taggers off the central Mexico coast were Howard Bond (29) off Colima, and Clarke Smith (9) off Puerto Vallarta.

Charter and private boat captains who support billfish tag-and-release (and catch-and-release) play an important roll by supporting ethical angling and conservation stewardship of the marine environment. They set an example by demonstrating skillful release of their billfish catch. During 2006 and 2007, 232 captains reported tagging billfish with their anglers and clients. We gratefully acknowledge those captains who released three or more billfish in specific regions (Table 5). Fifty-two captains tagged 10 or more billfish during 2006 and 2007. Captains Kevin Hiney, John Bagwell, and Dennis Cintas tagged 75 or more fish. Captains Peter Hoogs, Chuck Wigzell, Marlin Parker, Alan Abdill, Kevin Hibbard, Alan Armstrong, Jeff Fay, Bill Crawford, Tim Hicks, William Lazenby, Tom Casey, and Guy Terwilliger tagged 30 or more billfish off Hawaii. Captains Armando Arciniega, Mike Shrosbree and Rich Hamilton tagged more than 30 billfish off Mexico. Continued interest and cooperation by all captains has greatly enhanced the Billfish Tagging Program, and their efforts and conservation ethic are truly appreciated. These efforts are a critical component of sustainable billfish angling.

Sailfish
Istiophorus platypterus

Table 4. Names of anglers tagging three or more billfish during the 2006 and 2007 calendar years, by area.

ANGLER NAME	BILLFISH TAGGED
ACAPULCO-IXTAPA-ZIHUATANEJO, MEX.	
Johnnie W. Gibbs	4
Martin Yves	4
Ryan Sibrel	4
Guy Causse	3
Jim A. Collins	3
Mike Fitzgerald	3
Sonia Hubbard	3
BAJA CALIFORNIA, MEXICO	
Don Anderson	16
Pete Johnson Sr.	11
Tom Patierno	8
Bryan MacMurtrie	7
Jim Kopycki	7
Peter Johnson Jr.	7
Geline Zampell	5
Kenneth H. Schilling	5
Mark Henwood	5
Rich Johnson	5
Richard Hamilton	5
Brett Crane	4
Chris Mathews	4
Gerald Lester	4
Mike Shrosbree	4
Robert Woodard Jr.	4
Steve Hay	4
Craig Plitt	3
Dick Perkins	3
Dwain Nunez	3
Lane Walter	3
Mark Bernas	3
Maurice Smith	3
Pedro Orozco	3
COSTA RICA	
Bryan Freeman	5
James Gowans	4

ANGLER NAME	BILLFISH TAGGED
HAWAII, U.S.A.	
Rick Chaponot	11
James Karamouzis	10
Steve Keinath	8
John C. Hurlbut	6
Bob Creedon	5
Gary Carruthers	5
Jeff Harms	5
Jeff Oko	5
Joe Hinkey	5
John Patterson	5
Nigel Heath "The Cricket"	5
Sean Weaver	5
Bill Crawford	4
Charles W. Helscel	4
Dana Kitchens	4
Donald H. Frederickson	4
Janet B. Martic	4
John Bennett	4
Matt McKinney	4
Paul Caughlan	4
Randy Botti	4
Ron Tegland	4
Ronald Scanlon	4
Tom Lynch	4
Toshie Aoshima	4
Aaron Cecil	3
Alex Mahfouz	3
Bill Wheeler	3
Bo Godfrey	3
Bob Struwe	3
Deliman	3
Don Pyle	3
Doug Blanchard	3
Jason Rousseau	3
Jay Coons	3
Jeff Lanterman	3
Jeff Stafford	3
Jessica Sherman	3
Keith Allan	3
Mike Jacobsen	3

ANGLER NAME	BILLFISH TAGGED
HAWAII, U.S.A.	
Mike Sabin	3
P. Lim	3
Randy Wright	3
Robert Woodard Jr.	3
Sharon Handgis	3
Steve Spina	3
Tavish Lynch	3
Tim Rego	3
William Scarbrough	3
MANZANILLO, MEXICO	
Howard Bond	29
MAURITIUS	
Bourdeau Jerome	5
PUERTO VALLARTA, MEXICO	
Clarke Smith	9
SAMOA	
Jeff Shively	3
SOUTHERN CALIFORNIA, U.S.A.	
Lynn Jasper	9
William H. MacCorkell	7
Kathy Ecklund	5
Ann Thompson	3
Reed Miller	3
Stan Ecklund Sr.	3
TAHITI, FRENCH POLYNESIA	
Teariki Blais	3

TAG RECOVERIES IN 2006 AND 2007

The number of tag returns in 2006 and 2007 was low. In total, seven recaptures were reported during 2006 and 2007. In 2006, we received recapture information for two blue marlin and one shortbill spearfish (Table 6). In 2007, recapture information was received for two striped marlin, one blue marlin, and one unidentified marlin. Four recaptures occurred near the Hawaiian Islands, including two blue marlin, one shortbill spearfish, and one unidentified marlin. Two recaptures were reported from Mexico, including one striped marlin caught off Cabo San Lucas and one blue marlin caught off Acapulco. Finally, a striped marlin tagged from a charter vessel operating out of Hawaii was recaptured by a French Polynesian longliner not far from Tahiti. The estimated net distance traveled by this striper is 2,200 nautical miles and is one of the greatest distances traveled of 341 striped marlin recaptured since the Tagging Program began. Only three shortbill spearfish have been recaptured in the history of the Tagging Program, one of which was in 2006. The spearfish was tagged in April of 2006 off the southwestern corner of the big island of Hawaii and was recaptured northeast of the big island after 62 days at liberty.

Although there were not any sailfish or black marlin recoveries reported during 2006 and 2007, large numbers of these species have been tagged by anglers through our program. Little is known about their movements; however, from past recoveries for each of these species, we are beginning to learn about their movement patterns. Figure 2 shows net movements of sailfish and black marlin tagged and recaptured as part of the Billfish Tagging Program. Most of the sailfish releases and recoveries in the Arabian Gulf were conducted as part of a research project in the late 1990's on their regional behavior and biology by John Hoolihan.

Over the years of the Tagging Program some remarkable long distances and time at liberty have been seen as a

"Take Along" Tagging Guide

Fly the Tagging Flag!

1. BEFORE YOU CATCH YOUR FISH:

First decide if you plan to tag and release any fish caught. If so, use a circle hook which reduces deep or foul hooking when bait fishing or a single circle or single 'J' hook if trolling. Do not use double rigged 'J' hooks when releasing your catch.

2. WHILE FISHING:

Never attempt to tag a fish while it is jumping or thrashing about. Bring your fish to leader as quickly as possible but wait until the fish is calm and swimming beside the boat before tagging.

3. TAGGING:

Tag the fish as it is being towed alongside the boat by inserting the tag in the back muscle below the tallest part of the dorsal fin. Avoid the gills, head, and stomach. Take care not to allow your fish to injure itself on the vessel's transom or hull.

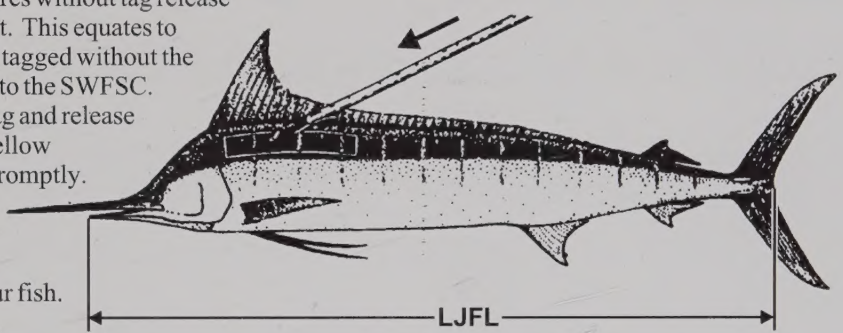
4. RELEASING:

Revive all fish by slowly towing it through the water, allowing water to flow over the gills until its normal color returns and it begins to swim on its own. Remove the hook with a good pair of pliers, or if deeply hooked in the throat or stomach, release it by cutting the leader as close to the hook as possible.

5. COMPLETE THE BILLFISH TAGGING REPORT CARD:

Fill out the yellow Billfish Tagging Report card completely and as accurately as possible indicating latitude and longitude, date of release, estimated length (lower jaw-to-fork length; LJFL) and estimated weight of the fish. Include name and mailing address of the angler and boat captain and other remarks as appropriate. Return cards promptly to the Southwest Fisheries Science Center.

PLEASE NOTE: Billfish recaptures without tag release information now stand at 12 percent. This equates to nearly 6,400 billfish that have been tagged without the release information being returned to the SWFSC. Make your tagging effort count. Tag and release your fish skillfully and return the yellow BILLFISH TAGGING REPORT promptly. Though easily forgotten in the heat of battle and glow of success, returning the card is the most critical and final step in tagging your fish.



COMPLETING THE BILLFISH TAGGING REPORT CARD

- Fill out the card completely and as accurately as possible.
- Indicate latitude, longitude and locally known fishing area.
- Estimate the length of the fish as "tip of lower jaw-to-fork" length (LJFL).
- Estimate weight of the fish.
- Include any remarks, club name and complete address of the angler and the boat captain.
- Return cards promptly to the Southwest Fisheries Science Center. Tagging is of no value unless this *Billfish Tagging Report* card is returned. Postage is paid if mailed in the U.S.A.

NOAA, National Marine Fisheries Service
BILLFISH TAGGING REPORT
PLEASE FILL IN DETAILS AND MAIL TODAY. TAG #: A33333

If mailing outside USA, postage must be affixed
Please return card, Otherwise tagging is of no value

Latitude: 33° 14' N Longitude: 118°14' W
Locality: East End Catalina Is. CA
Species: Striped Marlin Date: 6/10/98
Estimate length (tip of jaw to fork of tail): 72 inches. Weight: 140 lbs.
Fish Condition: Good Bait type: Plastic Lure
Angler: Bill Fish Fight time (minutes): 23
Address: P.O. Box 271 La Jolla, CA Zip: 92038
Club: Anglers Club
Captain: Capt. Joe Dew Boat name: Good Grief
Address: P.O. Box 271 La Jolla, CA Zip: 92038

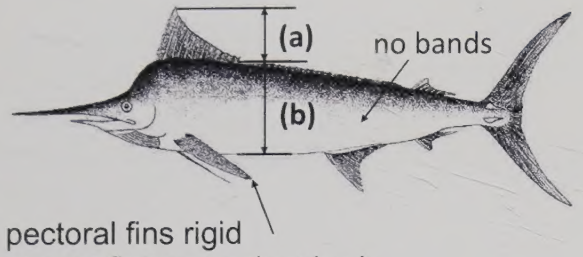
Response to this form is voluntary.
OMB 0648-0009, expiration date 08/31/2001
NOAA 88-162, 2/99

"Take Along" Identification Guide

Fly the Tagging Flag!

Black marlin

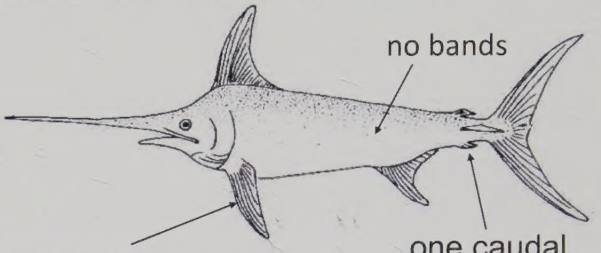
dorsal fin height (a) about
half body height (b)



pectoral fins rigid
cannot flatten against body

Swordfish

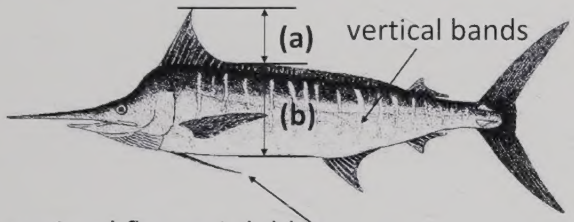
sword-like bill with smooth surface



* no pelvic fins present

Blue marlin

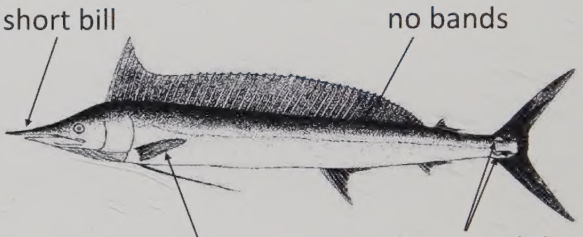
dorsal fin height (a) half to
three quarters body height (b)



pectoral fins not rigid
can flatten against body

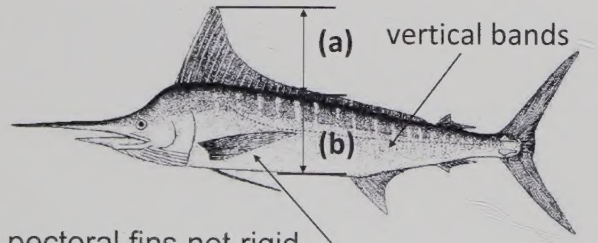
* body more stout than striped marlin

Shortbill spearfish



Striped marlin

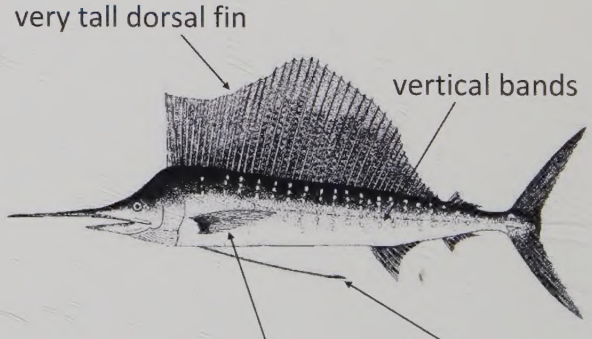
dorsal fin height (a) greater
than body height (b)



pectoral fins not rigid
can flatten against body

* body more compressed than blue marlin

Sailfish



result of reported tagged fish recoveries. Table 7 provides the maximum distance traveled and maximum time at liberty of some of the large pelagic species in our database.

Unfortunately, we have not received the release cards for one blue marlin and one unidentified marlin recaptured in 2007. It is important that all Billfish Tagging Program report cards be sent in as soon after tagging as possible. Additionally, please ensure that all fields are filled out when returning tag cards. This would be a great time to check your tackle boxes and ensure all Billfish Tagging Program report cards have been sent to our office.

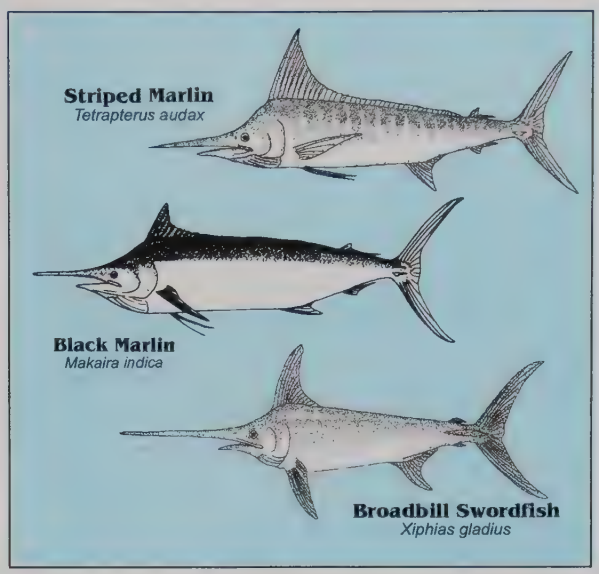


Table 5. Names of captains tagging 3 or more billfish during the 2006 and 2007 calendar years, by area.

CAPTAIN NAME	BILLFISH TAGGED
ACAPULCO-IXTAPA-ZIHUATANEJO, MEXICO	
Armando Arciniega	37
Richard Hamilton	11
BAJA CALIFORNIA, MEXICO	
Mike Shrosbree	31
John Algeo	19
John McCarty	17
Richard Hamilton	17
Mark Henwood	16
Rich Johnson	15
Harold Schram	11
Byran Adams	8
Paulino Martinez (Castro)	8
Robert Woodard Jr.	8
Martin Olechea	7
Martin Collins	6
Gerald Lester	5
Kenneth H. Schilling	5
Pedro Orozco	4
Eric Grennan	3
John Ulrich	3
Randy Hinton	3
Thomas A. Shanahan	3
COSTA RICA	
Daniel Espinozala Jimenez	14
Thomas Segueira	4
HAWAII, U.S.A.	
Kevin Hiney	93
John Bagwell	87
Dennis Cintas	75
Peter Hoogs	73
Chuck Wigzell	53
Marlin Parker	51
Alan Abdill	47
Kevin Hibbard	44
Alan Armstrong	43
Jeff Fay	43

CAPTAIN NAME	BILLFISH TAGGED
HAWAII, U.S.A.	
Bill Crawford	40
Tim Hicks	36
William Lazenby	33
Guy Terwilliger	30
Tom Casey	30
McGrew Rice	29
Scott M. Fuller	27
Ronald C. Miller	24
Wayne Knight	24
Steve Cravens	23
William Dorr	23
Bill Casey	21
John Jordan	21
Robert Hudson	21
James Dean	20
Charles E. Haupert	17
Jeff Metzler	16
Lance Gelman	16
Neil Isaacs	16
Sam Thies	15
Al Gustavson	14
Steven D. Kaiser	14
Brian (Chip) Van Mols	11
Jerry Allen	11
Ken Fogarty	11
Mike Holtz	11
Doug Lanterman	10
Scott Crampton	10
Alan Bakke	9
Frank Rennie Boyd	9
Robert McGuckin	9
Mike Derego	8
Allan Ayano	7
Jeff Kahl	7
Mark Shultz	7
Mike Hasbrouck	7
Kerwin Masunaga	6
Merritt Matheson	6
Robert C. Sylva, Jr.	6
Bill Benbow	5
David Bertuleit	5
Jason Holtz	5

CAPTAIN NAME	BILLFISH TAGGED
HAWAII, U.S.A.	
Lyle Yeck	5
Brian Wargo	4
Chip Fischer	4
Hector P. Ubaldo	4
Kevin McLaughlin	4
Marty L. Sands	4
Scotty Pruner	4
Steve Carroll	4
Bruce Evans	3
Bruce Herren	3
Chris Kam	3
Craig Denham	3
Dale Leverone	3
Kenny Llanes	3
Kent Mongreig	3
Kevin M. Hogan	3
Sam Choy, Jr.	3
Tom Rogers	3
Tony Clark	3
MANZANILLO, MEXICO	
Howard Bond	27
Richard Hamilton	3
MAURITIUS	
ColasYann	13
PUERTO VALLARTA, MEXICO	
Manuel Ocaranza	10
Maurice Nakagawa	6
Mike Shrosbree	3
SOUTHERN CALIFORNIA, U.S.A.	
Thomas A Shanahan	11
Stan Ecklund, Sr.	9
Dan Muslin	4
Ron Johnson	4
Craig Oliver	3
Kathy Ecklund	3
Rich Johnson	3
TAHITI, FRENCH POLYNESIA	
Pierre Blais	4

Table 6. Tag recovery information for 2006 and 2007.

TAGGER/CAPTAIN	RELEASE DATE	RELEASE LOCATION	RECOVERY DATE/ ANGLER	RECOVERY LOCATION	DAYS FREE	MILES/ DIRECTION TRAVELED
Striped Marlin						
Mike Mills Mike Derego	?	Hawaii, U.S.A.	05/05/2007 Stephen Yen-Kai-Sun	13°49'S 141°16'W Tahiti	?	~2,200 - SW
Robert A. Colasanti Harold Schram	05/01/07	23°46'N 109°10'W Gordo Bank, B.C.S., Mexico	08/04/2007 Bryan Adams	23°03'N 110°15'W Mexico	93	74 - SE
Blue Marlin						
Butch Cooley Marcos	02/01/2005	17°00'N 101°00'W Mexico	05/01/2006 Laurie Greenwood	16°11'N 99°55'W Mexico	454	79 - SE
Allen Stuart Jeff Fay	2006	19°38'N 155°59'W Hawaii, U.S.A.	11/13/2006 Russell Tanaka	21°14'N 158°13'W Hawaii, U.S.A.	?	158 - NW
Tagging card not received	?	?	02/12/2007 Hirokazu Saito	14°45'N 162°01'W	?	?
Shortbill Spearfish						
Smiley Nagy Kevin Hiney	04/04/2006	19°30'N 156°00'W Hawaii, U.S.A.	06/04/2006 Scott Spinak	21°47'N 154°11'W Hawaii, U.S.A.	454	79 - SE
Marlin, unidentified						
Tagging card not received	?	?	02/20/2007 Hawaiian Isles Seafood	19°30'N 156°00'W Hawaii, U.S.A.	?	?

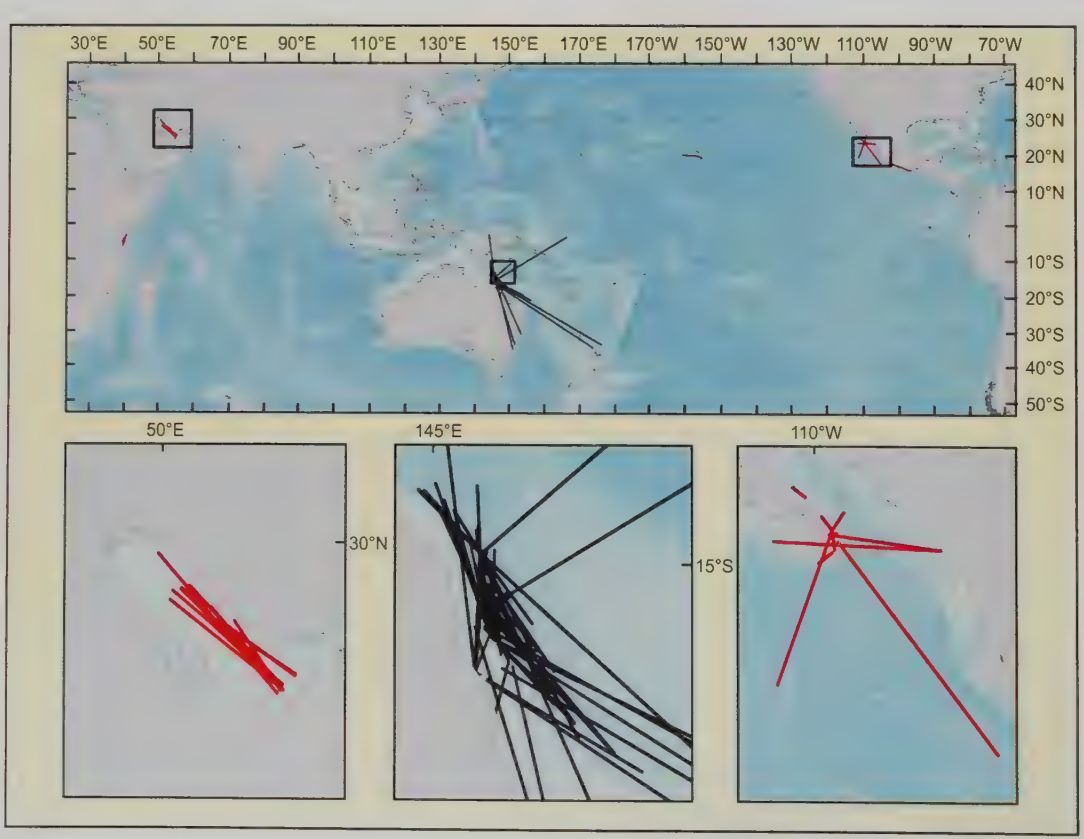


Figure 2. Movements of all black marlin and sailfish tagged and recovered in conjunction with the Billfish Tagging Program since the Program's inception. Black lines represent black marlin and red lines represent sailfish.

PACIFIC STRIPED MARLIN STOCK STATUS UPDATE

Commercial fisheries for highly migratory species are managed internationally by the Inter-American Tropical Tuna Commission (IATTC) in the Eastern Pacific Ocean and the Western and Central Pacific Fisheries Commission (WCPFC) in the Western Pacific Ocean. The majority of nations fishing for large pelagic fish in international waters of the Pacific are members of one or both of these Commissions. The Commissions monitor the status of the stocks and develop conservation measures when needed based on scientific advice.

Striped marlin are taken in fisheries predominately targeting tuna or swordfish and by recreational anglers. SWFSC scientists have played a key role in assessing the status of the striped marlin population in the North Pacific. In 2007, the International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific (ISC) conducted a stock assessment of striped marlin in the North Pacific. The population status is difficult to determine due to a range of uncertainties in both the fishery and biological data. Nevertheless, the results demonstrate that striped marlin biomass has declined to a level that is 6 to 16 percent of the biomass level in 1952. In addition, striped marlin landings, which peaked at roughly 14,000 metric tons annually in the late 1960s (Figure 3), and indices of abundance have both declined markedly.

Similarly, estimated recruitment for this species has been steadily declining with no evidence that strong year-classes have or are about to enter the fishery.

There appears to be inconsistency in the data from the Western Pacific and the Eastern Pacific fisheries. Scientists recommended that future modeling efforts include spatial segregation to accommodate regional variability. The IATTC has conducted separate analyses of striped marlin status based on data from the Eastern Pacific. The results are less pessimistic and demonstrate that the population biomass is at 50 to 70 percent of its unfished biomass. They conclude that current catch levels in the Eastern Pacific are sustainable.

Both the WCPFC and IATTC currently have resolutions in place that call for the prompt release, unharmed, of non-target billfish by their members. In addition, the ISC recommends, based on the results of the 2007 stock assessment, that fishing mortality of striped marlin in the North Pacific be reduced. Many Pacific countries already impose domestic management measures limiting commercial take of striped marlin, particularly in near-shore waters where recreational anglers fish. Thus, we are hopeful that striped marlin in the Pacific will benefit from the combined efforts of the Commissions, their members and ethical anglers who contribute by monitoring annual billfish catch and effort and participating in the Billfish Tagging Program.

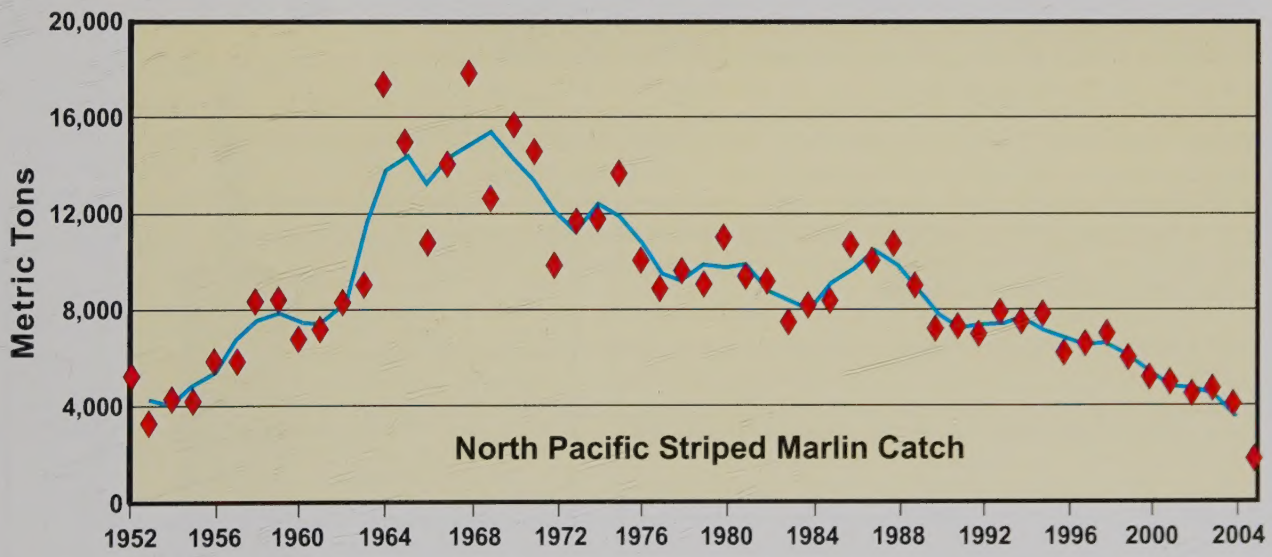


Figure 3. Annual and running three year average of striped marlin catch (metric tons) in the North Pacific. Data are from the International Scientific Committee Plenary Meeting, July 2008.

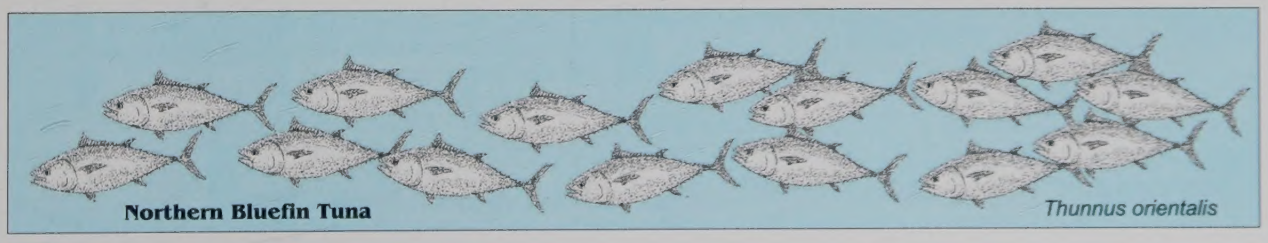


Table 7. Maximum net distance traveled and longest time at liberty for billfish, tunas, and pelagic sharks tagged in conjunction with the Billfish Tagging Program and other SWFSC research programs during 1963-2007.

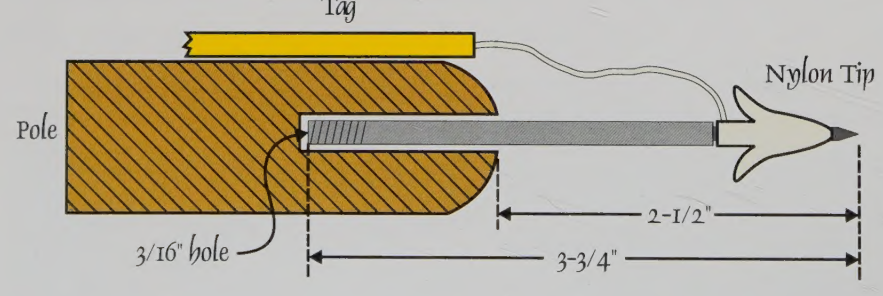
SPECIES	MAXIMUM DAYS AT LIBERTY	MAXIMUM NET MOVEMENT (nmi)
Sailfish	1,717	932
Broadbill Swordfish	1,681	2,573
Striped Marlin	1,585	3,693
Pacific Blue Marlin	1,503	4,450
Black Marlin	1,454	5,763
Shortbill Spearfish	34	173
Albacore Tuna	3,565	5,587
Bluefin Tuna	1,829	5,116
Yellowfin Tuna	324	850
Skipjack Tuna	290	575
Shortfin Mako Shark	1,938	3,935
Salmon Shark	1,547	285
Blue Shark	1,378	4,102
Common Thresher Shark	800	170
Silky Shark	175	447

Photo of sailfish is provided by Chugey Sepulveda. It was taken in June off Punta Chivato in the Sea of Cortez, Baja California Sur.

CONSTRUCTING THE TAGGING POLE

It is important that the billfish tag be applied properly. Tag location, angle, and depth are critical to successful tagging. For striped marlin of 100 to 200 lbs, the tag should be inserted about 2.5 inches deep just below the tallest part of the dorsal fin. For larger fish, such as blue and black marlin, the tagging applicator pin may be 3.5 inches. Conversely, if you are tagging small, narrow fish like sailfish and shortbill spearfish, then it would be better to shorten the pin. Manufactured tagging poles are available at most retail sportfishing stores. It is important to check the length of the applicator pin installed on these poles to ensure the length of the tip matches the fish you are seeking. Some manufacturers produce tagging poles that have pin lengths that are adjustable by moving the stopper.

If you construct your own tagging pole, an old wooden broom or mop handle about five feet long works very well. A hole should be drilled with a 3/16 inch or No. 16 drill bit to a depth of 1.25 inches for the applicator tip (see diagram below). Use a good grade epoxy to secure the applicator pin and seal out saltwater.



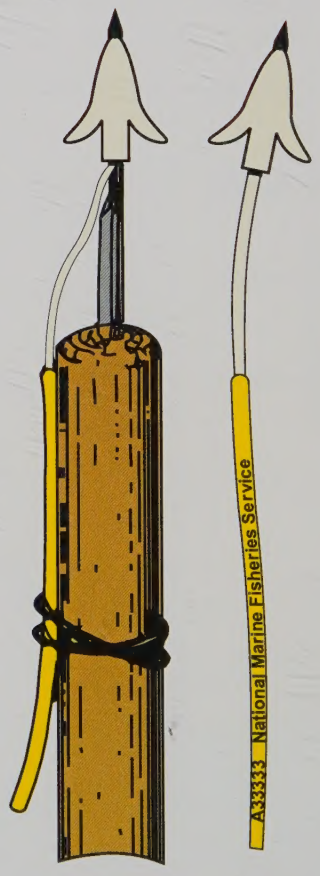


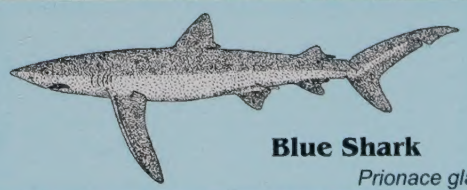
Photo was taken by Angela Williams onboard the *Vixen*, skippered by Capt. Renny Boyd. The blue marlin in the photo was being released back into the water with yellow spaghetti tag properly inserted into back muscle below the tallest part of the dorsal fin.

PAPER REDUCTION ACT NOTIFICATION

NOAA Fisheries needs this information for the conservation and management of fishery resources. The information will be used for billfish research. Public reporting burden for the Billfish Angler Survey card is estimated to average five minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The reporting burden to complete the Billfish Tagging Report is estimated to average five minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate to the SWFSC, 8604 La Jolla Shores Drive, La Jolla, CA 92037. The information submitted will become a public record. Notwithstanding any other provision of the law, no person is required to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number.

SHARK RESEARCH PROGRAM

The SWFSC's Large Pelagics group has a significant shark research program. Tagged and recaptured sharks in that program are mentioned here as general interest and because we need your support to look for bright yellow and/or white tags on the dorsal fin of shortfin mako, blue, and thresher sharks. These specially tagged sharks are part of our age and growth studies and are very important. These sharks were tagged with oxytetracycline which leaves a growth mark on the shark's vertebrae. We offer a US$100.00 reward for the return of the tag with a four inch section of the vertebrae. Please notify this office as soon as possible if you catch one of these tagged sharks.



Blue Shark

Prionace glauca

SEND US YOUR PHOTOGRAPHS

This years cover photo is provided by Kydd Pollock. The photo is of Kydd holding a sailfish that he caught and released off the Kona coast of the big island of Hawaii.

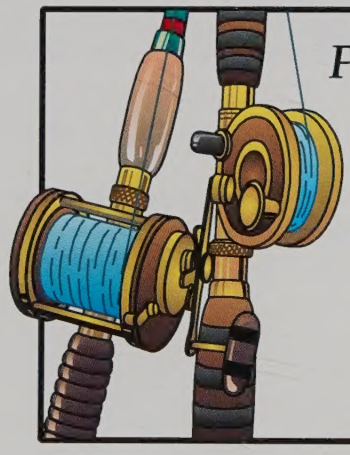
We are looking for good photographs of billfish for the cover of next year's *Billfish Newsletter*. Color or black-and-white photos of billfish and/or fishing activities are appropriate. We would appreciate your sharing of photos and will give you full credit in the 2009 issue. A billfish baseball cap and plaque will be awarded to the winning photographer.

SURVEY RESPONSE

BILLFISH ANGLER SURVEY cards for fishing in the 2008 calendar year were mailed in early 2009 If you have not already, please complete the survey and return the post-paid form as soon as possible. Additional 2008 Angler Survey forms are available to all billfish anglers by contacting this office, or they can be downloaded from our website. See http://swfsc.noaa.gov/frd-billfish.aspx. We hope to implement an online submission system in the future. U.S. Government regulations require we purge our mailing list each year. If you wish to continue to receive the *Billfish Newsletter* but did not fish, please indicate "NO FISHING" on the Billfish Angler Survey form and return it to the SWFSC. Your name will be retained on our mailing list. Your continued response to the Billfish Angler Survey is needed to monitor changes in abundance of billfish stocks important to recreational fisheries.

ACKNOWLEDGEMENTS

The information reported here would not be possible without the cooperation of thousands of anglers and volunteers who support these investigations. Their efforts and assistance are greatly appreciated. We also thank Daniel Yanagi and Ofelia Ramirez who helped enter and tabulate the data for this newsletter, and Roy Allen who designed and produced the Newsletter. This and past *Billfish Newsletters*, and the 2008 Angler Survey form, can also be accessed through the SWFSC's webpage at http://swfsc.noaa.gov/frd-billfish.aspx. We welcome reader comments and suggestions concerning the content of the *Billfish Newsletter*.



Fine fishing for now and forever!

Suzanne Kohin, Fishery Biologist
James Wraith, Fishery Biologist

Southwest Fisheries Science Center
8604 La Jolla Shores Drive
La Jolla, CA 92037-1508
Phone - (858) 334-2800
FAX - (858) 546-7003
email: suzanne.kohin@noaa.gov
james.wraith@noaa.gov

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Fisheries Science Center
8604 La Jolla Shores Drive
La Jolla, California 92037-1508